

Newcastle Southern Beaches
Coastal Management Program (CMP)

Coastal Management Options Summary

2025

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City of
Newcastle



Image © David Diehm, Bar Beach Erosion Storm



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Newcastle Southern Beaches CMP

Councils in New South Wales are required to develop Coastal Management Programs (CMPs) under the *Coastal Management Act (2016)*, which provides a long-term, evidence-based strategy for the coordinated management of the coast.

CMPs identify coastal management issues and the actions required to address them. This includes how and when actions are to be implemented, their costs and proposed funding mechanisms and cost-sharing arrangements. A CMP must be certified by the NSW Government.

The Newcastle Southern Beaches CMP is being developed by City of Newcastle (CN) for the coastal zone between Nobbys Headland in the north to Glenrock Lagoon in the south, including Horseshoe Beach, Nobbys Beach, Newcastle Beach, Susan Gilmore Beach, Bar Beach, Dixon Park Beach, Merewether Beach, and Burwood Beach.



The importance of a CMP

The Newcastle Southern Beaches coastline is a social, environmental and cultural asset, but it is changing under pressure from rising sea levels and more frequent and intense storms as a result of climate change, leading to severe erosion, coastal inundation and shoreline retreat.

These pressures will narrow beaches and reduce space for recreation, events and tourism, and also lead to our nearby community infrastructure, such as surf clubs, coastal walkways, beach accessways, road infrastructure, stormwater assets and utilities being more at risk.

If left unmanaged, these hazards will lead to a loss of public spaces and assets, decreased beach amenity and ecological degradation.



Image © Jo Acland Photography, Bar Beach Swell Event July 2025



Why we are focusing on Bar Beach to Merewether Beach

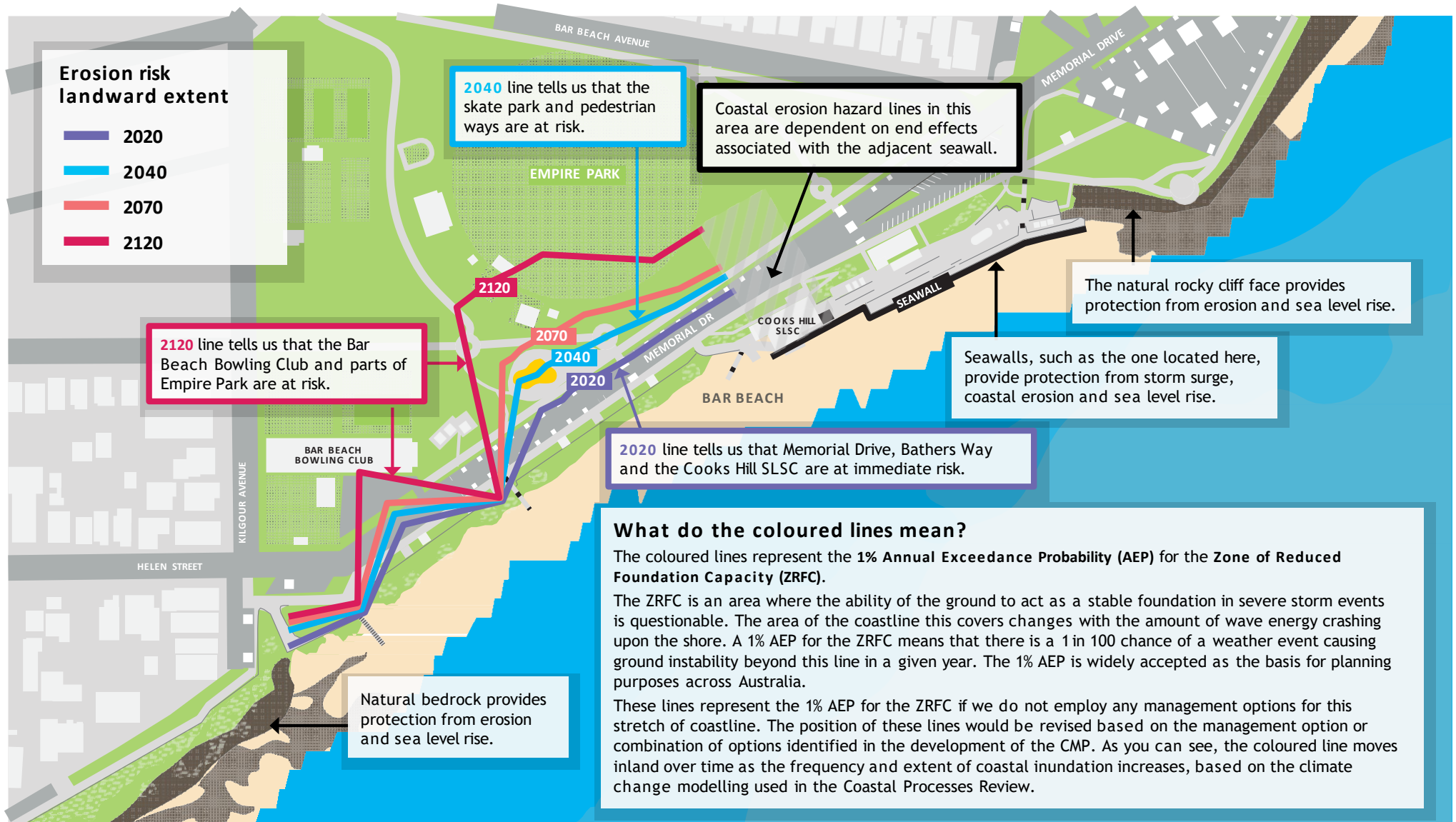
Our investigations have identified that the coastline section from Bar Beach to Merewether Beach is at the highest and most immediate risk, which is why the proposed management options focus on this area.

Specifically:

- There are no major coastal protection structures between Cooks Hill Surf Life Saving Club and The Cliff.
- There isn't adequate natural protection (dune volume) at Bar Beach.
- Parts of the coast, including Bathers Way, Cooks Hill Surf Life Saving Club, and Memorial Drive are currently at immediate risk from erosion and storm damage.
- Existing protection structures provide some defence but will require ongoing maintenance.
- Existing protection structures 'fix' the coastline in place, which means that as sea level rises, the shoreline will migrate landward and the sandy beach will disappear under water over time.
- By 2040-2070, additional parts of the coast will be seriously affected by shoreline recession, erosion and storm damage if no action is taken.

We need effective, practical and long-term strategies to keep this coastline section safe and accessible.

Bar Beach erosion hazard lines from 2020-2120



Feasibility assessment

The management options presented in this document were informed by a Feasibility Assessment Report, which provides potential coastal management options in response to current and future coastal erosion risks for the stretch of coastline between Bar Beach carpark and Merewether Ocean Baths.

The Feasibility Assessment Report builds on historic data, recent geotechnical investigations, coastal hazard modelling, a surf amenity assessment and the latest climate science to refine which options are the best fit to manage our beaches and assets.

It considers whether the options are practical, cost-effective and environmentally responsible, and if they meet community use needs, and most importantly, whether they will effectively address the risks identified.

Feasibility assessment process

Step 1 Gathering options

A broad list of coastal management options were considered based on local, national, and international best practice. These fell into three strategic categories:

- **Protection structures:** seawalls, artificial reefs, groynes
- **Adaption:** dune rehabilitation, sand nourishment, improved stormwater outlets
- **Retreat:** relocating assets like buildings, pathways and roads to allow natural beach migration

Step 2 Feasibility testing

Each option was assessed following a 'traffic light test', where for each evaluation criteria the option could receive the following rating:

- **Go:** feasible, cost-effective and widely acceptable
- **Slow:** potentially viable but requires further investigation
- **Stop:** technically unsuitable, too costly, or socially unacceptable

Any option that received a single 'stop' evaluation, or an entirely 'slow' evaluation, was discarded from the long list. The options that received a combination of 'go' and 'slow' evaluations across the criteria comprised the short list that included the options below. The evaluation criteria related to:

- Legal compliance
- Technical feasibility given local wave climate, sand movement and geology
- Environmental and social impacts
- Capital and ongoing maintenance costs
- Ability to address immediate and long-term risks

Step 3 Multi-criteria assessment (MCA)

The MCA was used to take a deeper look at the impacts of the short listed options and how they compared, based on:

- **Technical performance:** ability to protect assets and maintain a sandy beach
- **Environmental benefits or impacts:** effect on dune systems, surf break, marine habitats and natural processes
- **Cultural and community values:** alignment with recreational use and cultural acceptability
- **Cost efficiency:** value for money over the project's lifecycle

Shortlisted management strategies

Due to the changing nature of our coastline, including the impacts of climate change, the status quo can't remain, and we need to take immediate action to manage our assets and to ensure our community and visitors can continue to enjoy our coastline now and into the future.

The management strategies considered for Bar Beach to Merewether Beach are:



Beach nourishment: adding sand to widen the beach. Initial, large-volume sand placements will be sourced from offshore, with investigations into specific source locations to be undertaken if this strategy was chosen.



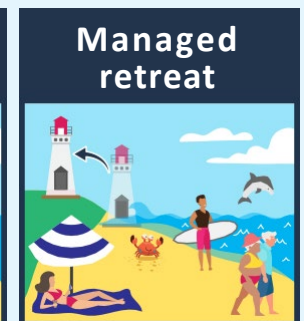
Protection: strengthening or building protective barriers like seawalls and revetments.



Managed retreat: relocating or removing assets at risk to improve the natural resilience of the beach and allow it to naturally migrate landwards.

Hybrid options

Options where strategies are not considered in isolation and a combination of protection, nourishment and retreat elements is required.



Management options

These strategies have been developed into four key management options for Bar Beach, and three key options for Dixon Park/ Merewether Beach, as outlined on the following pages, with indicative costings, informed by the feasibility assessment.

CN has made minor adjustments to some of the options provided by the feasibility assessment, informed by staff expertise and with consideration of onground practicalities.

Surf quality impacts have been determined based on the findings from the surf amenity impact assessment report.



Indicative costs

Costs associated with each option **do not** include the relocation/ reconstruction of assets, and should be viewed as the minimum viable amount to undertake an option.

- Costs are GST inclusive and include a 40% contingency to account for inflation and variations in the market.
- Operating costs are annualised over a decadal period.
- Costs will be refined in the further stages of CMP development.

Management options for Merewether Beach and Dixon Park Beach

Merewether and Dixon Park option 1 (MDP 1)

Maintain seawall + amenity sand nourishment



Year 1

Upgrade existing seawall from John Parade to Dixon Park Beach.

Year 20

Initial sand nourishment of 165,000m³ from offshore sources for a target average beach width of 10m, with regular top ups from offshore sources (sub-option a) or Nobbys (sub-option b).

Benefits

- Protection of existing infrastructure, including buildings, pathways and roads.
- A sandy beach into the future.

Risks

- Impact to surf quality once sand nourishment commences.
- Challenges sourcing sand from offshore.
- Loss of effectiveness of sand nourishment after repeated severe storm / erosion events, may lead to limited beach resilience in the long-term.
- Traffic impacts and temporary closure to parts of Nobbys Beach if sand top ups come from there.

Indicative capital costs

\$26 million.

Indicative operating costs

Up to \$1 million per year depending on sand source for top ups.

Management options for Merewether Beach and Dixon Park Beach

Merewether and Dixon Park option 2 (MDP 2)

Maintain seawall + managed partial retreat



Year 1

Upgrade existing seawall along John Parade.

Year 20

Remove seawall in front of Dixon Park carpark to allow natural erosion to occur.

Benefits

- Allows some natural beach migration and a more resilient sandy beach at Dixon Park into the future.
- No near-term impact on surf quality.

Risks

- Eventual loss or relocation of parklands and/or carparks.
- Eventual loss of sandy beach in front of maintained seawall owing to sea level rise.

Indicative capital costs

\$10 million.

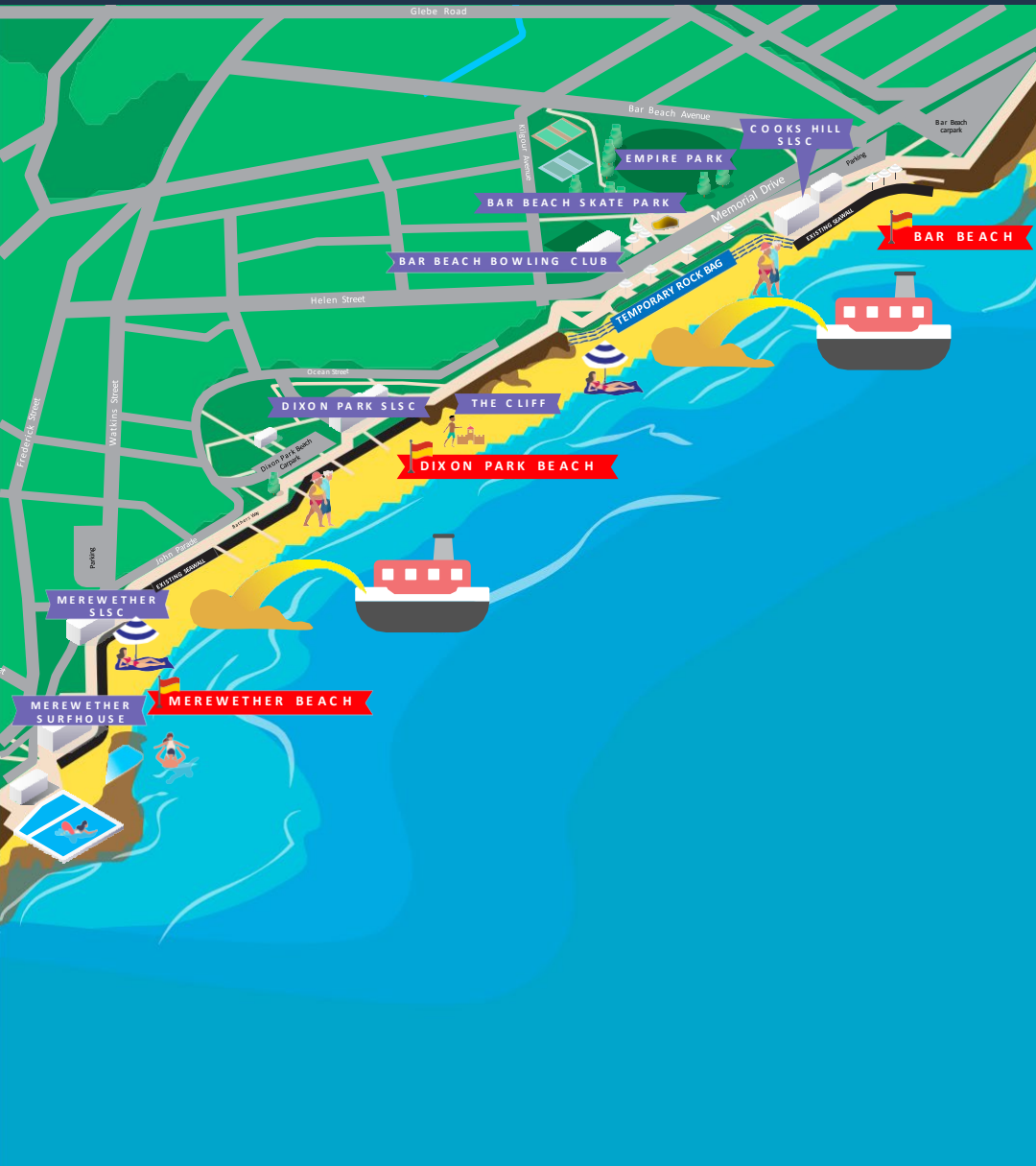
Indicative operating costs

\$0.3 million per year.

Management options for Bar Beach to Merewether Beach

Merewether and Dixon Park option 3 + Bar Beach option 1 (MDP 3 & BB 1)

Mass sand nourishment



Year 1

Temporary rockbag structure placement at Bar Beach until initial mass nourishment. Investigations into offshore sand sources commence.

Year 3-5

Delivery of 1.3 million m³ of sand for mass sand nourishment from offshore sources, for a target average beach width of 40m. Temporary rockbag structures removed once nourishment completed.

Year 10

Decadal sand top ups from offshore sources.

Benefits

- A sandy beach now and into the future.
- Flexible management option with potential to change in future if desired.
- Protection of existing infrastructure, including buildings, pathways and roads.

Risks

- Severe impact on surf quality due to large increase of sand in the local environment.

- Challenges sourcing sand from offshore.
- Loss of effectiveness of sand nourishment after repeated severe storm / erosion events may lead to limited beach resilience and protection of assets in the long-term.
- Ecological impacts from excess sand on site (effects on plants and animals that live in the sand and in the ocean).

Other considerations

- This option is a whole-of-embayment option (from Bar Beach to Merewether Beach).
- Cooks Hill SLSC could be retained or relocated under this option. Its present location leaves it at risk if repeated erosion events reduce the protection benefits from mass sand nourishment.
- The maintenance of existing seawalls is not included in cost estimates.

Indicative capital costs

\$45 million.

Indicative operating costs

\$0.7 million per year.

Management options for Bar Beach

Bar Beach option 2 (BB 2)

Seawall + amenity sand nourishment



Year 1

New seawall along current escarpment at the southern stretch of Bar Beach.

Year 5

Initial sand nourishment of 165,000m³ from offshore sources for a target average beach width of 10m, with regular sand top ups from offshore sources (sub-option a) or from Nobbys (sub-option b).

Benefits

- Protection of existing infrastructure, including buildings, pathways and roads.
- A sandy beach now and into the future.

Risks

- Moderate impact to surf quality through wave interaction with the new seawall and the introduction of more sand into the local environment.
- Short-term environmental impacts to the sand dune during seawall construction, with dune rehabilitation required.

- Loss of effectiveness of sand nourishment after repeated severe storm / erosion events, may lead to limited beach resilience in the long-term.
- Challenges sourcing sand from offshore.
- Traffic impacts and temporary closure to parts of Nobbys Beach if sand top ups come from there.

Other considerations

The Cooks Hill SLSC building could be retained or relocated under this option. Its present location provides engineering challenges in constructing a seawall due to necessary beach access, seawall shape and alignment, and end effects potentially exacerbating erosion issues.

Indicative capital costs

\$29 million.

Indicative operating costs

Up to \$0.6 million per year depending on sand source for top ups.

Management options for Bar Beach

Bar Beach option 3 (BB 3)

Seawall setback 12m + amenity sand nourishment



Year 1

Begin partial retreat of Bathers Way and Memorial Drive, with Memorial Drive to go down to one lane.

Year 5

Relocation of Cooks Hill SLSC building and construction of new buried seawall setback 12 metres.

Year 20

Initial sand nourishment of 165,000m³ from offshore sources for a target average shore width of 10m, with regular top ups from offshore sources (sub-option a) or from Nobbys (sub-option b).

Benefits

- New Cooks Hill SLSC building in protected location.
- Allows some natural beach migration and a more resilient sandy beach into the future.
- Protection of some of the roadway, skate park and bowling club.
- Increased dune and green space over the medium-term.

Risks

- Short-term environmental impacts to the sand dune during seawall construction, with dune rehabilitation required.
- Traffic changes when Memorial Drive is limited to one lane.
- Impact to surf quality in the long term from sand nourishment and changed coastline shape interacting with sea level rise.
- Change to existing Bathers Way.
- Challenges sourcing sand from offshore.
- Traffic impacts and temporary closure to parts of Nobbys Beach if sand top ups come from there.

Indicative capital cost

\$33 million.

Indicative operating cost

Up to \$0.7 million per year depending on sand source for top ups.

Management options for Bar Beach

Bar Beach option 4 (BB 4)

Managed retreat



Year 1

Managed retreat begins with Memorial Drive closure and traffic redirection onto Bar Beach Avenue and Kilgour Avenue.

Benefits

- Allows natural beach migration and a more resilient sandy beach into the future.
- New Cooks Hill SLSC building in protected location.
- Retains normal surf quality in the near-term.
- Increased dune and green space area.

Risks

- Loss of Bathers Way, Memorial Drive, the skate park and parts of Empire Park.
- Traffic changes due to part closure of Memorial Drive.
- Potential impacts to surf quality in future decades from changed coastline shape interacting with sea level rise.

Indicative capital cost

\$6 million.

Indicative operating cost

\$0.03 million per year.

Impact Overview of Management Options

A summary of the positive and negative impacts relative to each other of each short-listed management option is provided below.

- Each of these options has different pros and cons, and all of them require trade-offs.
- The management options will be supported by activities like ongoing dune rehabilitation and cliff stabilisation works.

Type of management	Indicative capital cost	Indicative operational cost	Sandy beach	Impact to surf quality^^	Protection of existing assets^	Impact to environment	Resilience to climate change	Impact to existing roads
Merewether and Dixon Park option 1 (MDP 1) Maintain seawall + amenity sand nourishment	\$26m	\$1m [†]						
Merewether and Dixon Park option 2 (MDP 2) Maintain seawall + managed partial retreat	\$10m	\$0.3m						
Merewether and Dixon Park option 3 + Bar Beach option 1 (MDP 3 & BB 1) Mass sand nourishment	\$45m	\$0.7m			*			
Bar Beach option 2 (BB 2) Seawall + amenity sand nourishment	\$29m	\$0.6m [†]			*			
Bar Beach option 3 (BB 3) Seawall setback 12m + amenity sand nourishment	\$33m	\$0.7m [†]						
Bar Beach option 4 (BB 4) Managed retreat	\$6m	\$0.3m						

Very good Good Average Poor Very poor

^ Protection of existing assets at current location, such as buildings, active pathways, recreational areas.

*Option to relocate or retain Cooks Hill SLSC building.

† Indicative operational costs will depend on sand source for top ups.

^^ Ratings informed by the Surf Amenity Impact Assessment Report.

Funding strategy

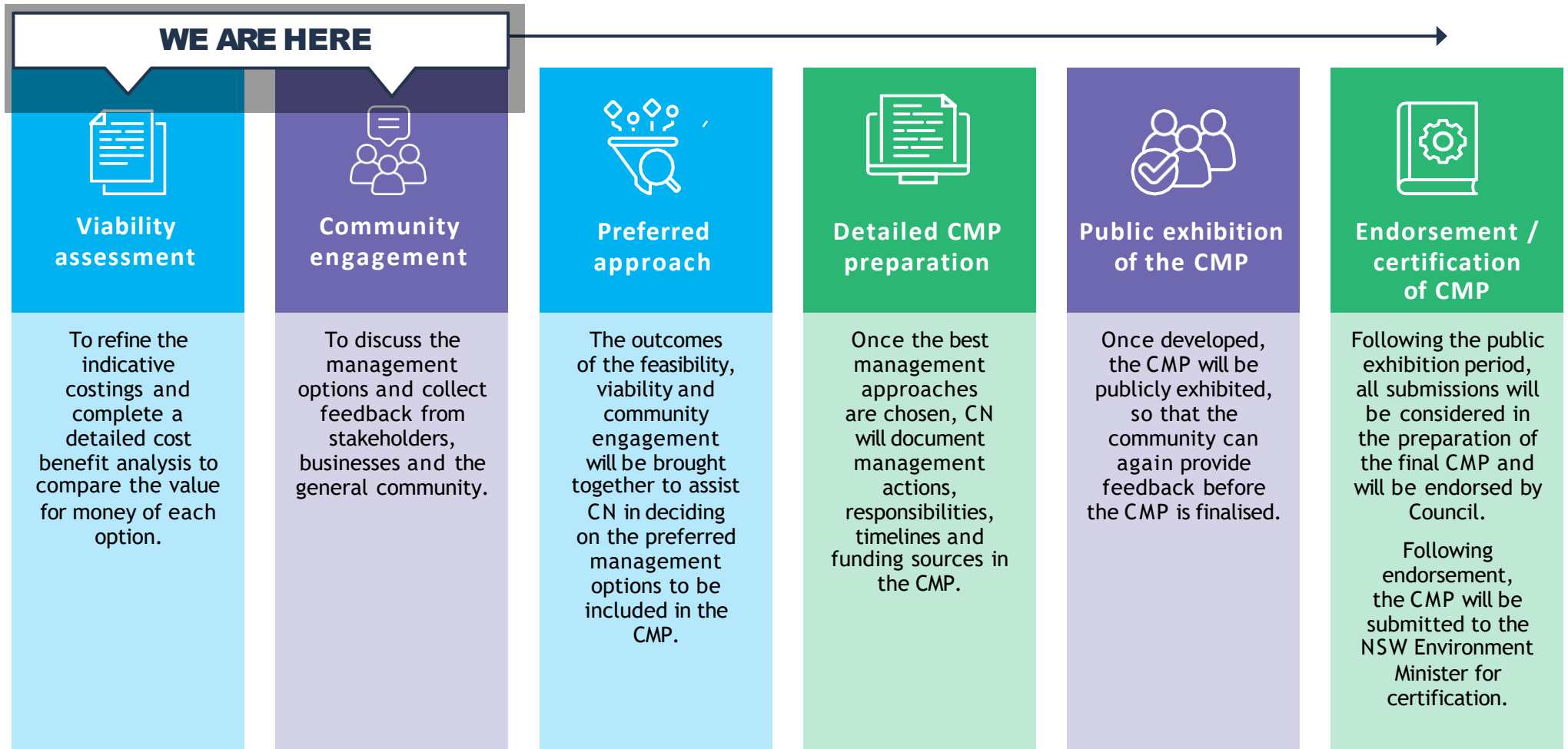
For a Coastal Management Program to be certifiable by the NSW Government, it must be funded.

The costs in the Newcastle Southern Beaches CMP will need to be integrated into future capital works programming and a funding strategy developed. CN will continue to advocate and explore NSW Government and Federal Government funding opportunities.



What are the next steps?

Now that we have a shortlist of feasible options, the next steps are:



Further references

1. Haskoning 2022, Newcastle Southern Beaches CMP: Coastal Processes Review Report
2. RCA Australia 2023, Geotechnical Investigation Bar Beach and Dixon Park Beach, Newcastle, NSW.
3. Intercoastal 2025, Surf Amenities Impact Assessment: Newcastle Southern Beaches CMP
4. Haskoning 2025, Newcastle Southern Beaches Coastal Management Program: Feasibility Assessment

Bar Beach in the 1970s



Bar Beach, 1977
Newcastle Morning Herald Collection



Bar Beach, Memorial Drive, 1976
K.G. Edwards Collection

June 2012 storm

Storm and erosion event.



Bar Beach, 2012



Merewether Beach, 2012

January 2025 storm

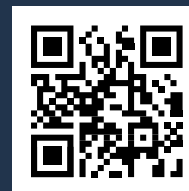
120km/h winds displaced sand and moved it onto Memorial Drive, Bar Beach and John Parade, Merewether.



Memorial Drive, Bar Beach, 2025



John Parade, Merewether, 2025



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